ABSTRACT

DINNA AYU KARUNNIAWATI, 3125110059. Cox Stratified Regression Model to Deal Non-Proportional Variables On Survival Data. Faculty of Mathematics and Natural Science Jakarta State University. 2016.

The Cox proportional hazard regression model, which is the most popular mathematical method used for analyzing censored survival data. This model assumes that hazard ratio of two individuals is constant over time. If the assumption is violated, stratified Cox regression model can be used to deal with non-proportionality of hazards with time-independent variables. Regression coeficients in the stratified Cox regression model are estimated using maximum partial likelihood method. Sometimes, ties could be occured in survival data. To handle it, partial likelihood approximation given by Breslow and Efron can be used. According to example of survival data that used in this study, los variable is not satisfying the proportional hazard assumption and that variable will be splited into two strata. After using stratified Cox regression model and comparing between interaction stratified Cox regression model with no-interaction stratified Cox regression model, the result is no-interaction stratified Cox regression model should be used. Therefore, the conclusions are elderly patients are more at risk, women patients are more at risk than man patients, and patients with underweight category of BMI (body mass index) are more at risk.

Keywords *: survival data, time-independent variables, stratified Cox regression model, partial likelihood,Breslow,Efron.*